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**FINAL TECHNICAL REPORT FOR:**  
**“Air-Deployed Ocean Drifters for Typhoon Observations”**

**ONR Award #:ONR- N00014-09-1-0822**

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**Long Term Goals**

The long term goal of our tropical cyclones research theme is to develop and refine an observational methodology to investigate the interaction between the ocean and the atmosphere. Such observations are important to improve models of typhoon intensity and growth and to observe the response, and the subsequent decay of the upper ocean thermal structure.

## Objectives

The purpose of this Defense University Research Instrumentation Program (DURIP) was to acquire an array of air-deployable drifters to be used for the Impact of Typhoons on the Western Pacific Ocean (ITOP) program sponsored by the Office of Naval Research (ONR). The goal was to enhance the basic drifter array (20 units) already funded by ONR for the ITOP project. With this extra DURIP funds, we were therefore able to reach our target of 60 drifter units for this experiment.

## Approach

To achieve this goal 20 Autonomous Drifting Ocean Stations (ADOS, Figure 1) and 20 Surface Velocity Program Barometer (SVPB, Figure 2) drifters were purchased. The ADOS and the SVPB systems were purchased from Pacific Gyre, Inc.

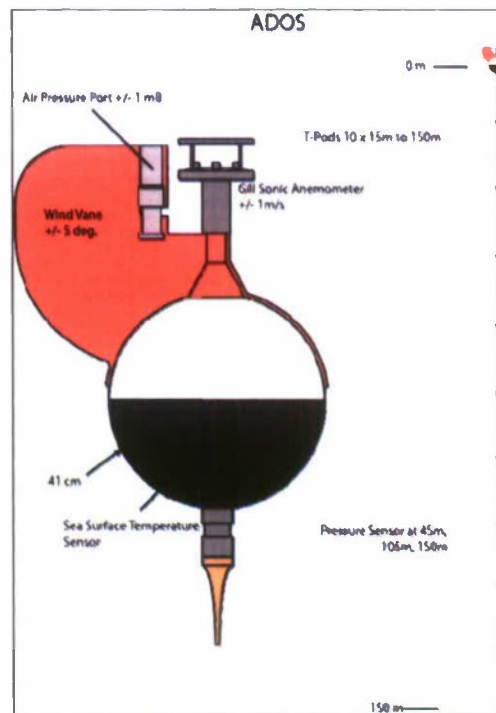


Figure 1: Schematics of the ADOS system.

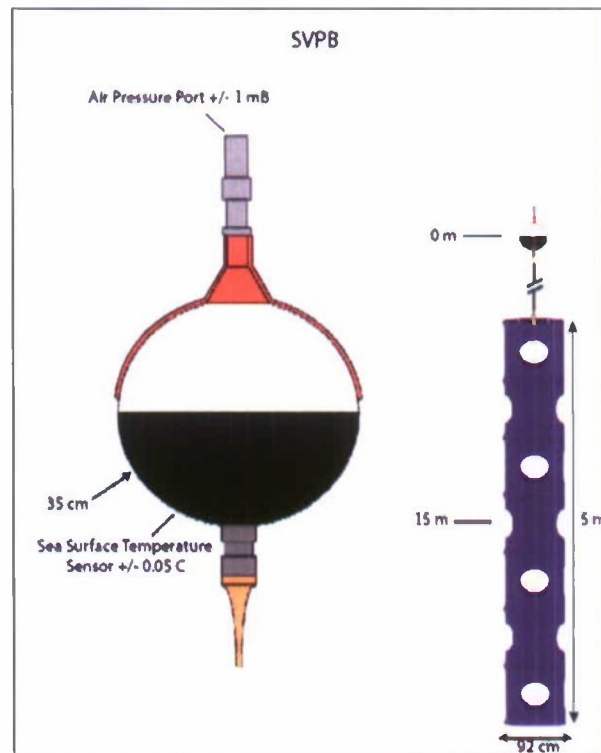


Figure 2: Schematics of the SVPB drifter.

### Work Accomplished

The drifters were shipped from Oceanside (California) to Kessler AFB and airlifted to the Anderson AFB in Guam. Two engineers from the SIO drifter's group (Mr. Christopher McCall and Mr. Lancelot Braasch) alternated in Guam to prepare the air-deployable drifter packages and oversee the loading on the C-130J aircraft. The first array of 48 drifters was deployed in front and in the wake of typhoon Fanapi, starting from September 17, 2010. The remaining drifters were deployed in the wake of typhoon Malaks, on September 29, 2010.

### Results

Out of the 60 drifters deployed in the two typhoons, 55 returned data (92% success rate). The trajectories of the drifters deployed in front and in the wake of Fanapi (Figure 3) suggest the existence of inertial oscillations in the wake of the storm. The data from the two deployment are now being analyzed and interpreted.

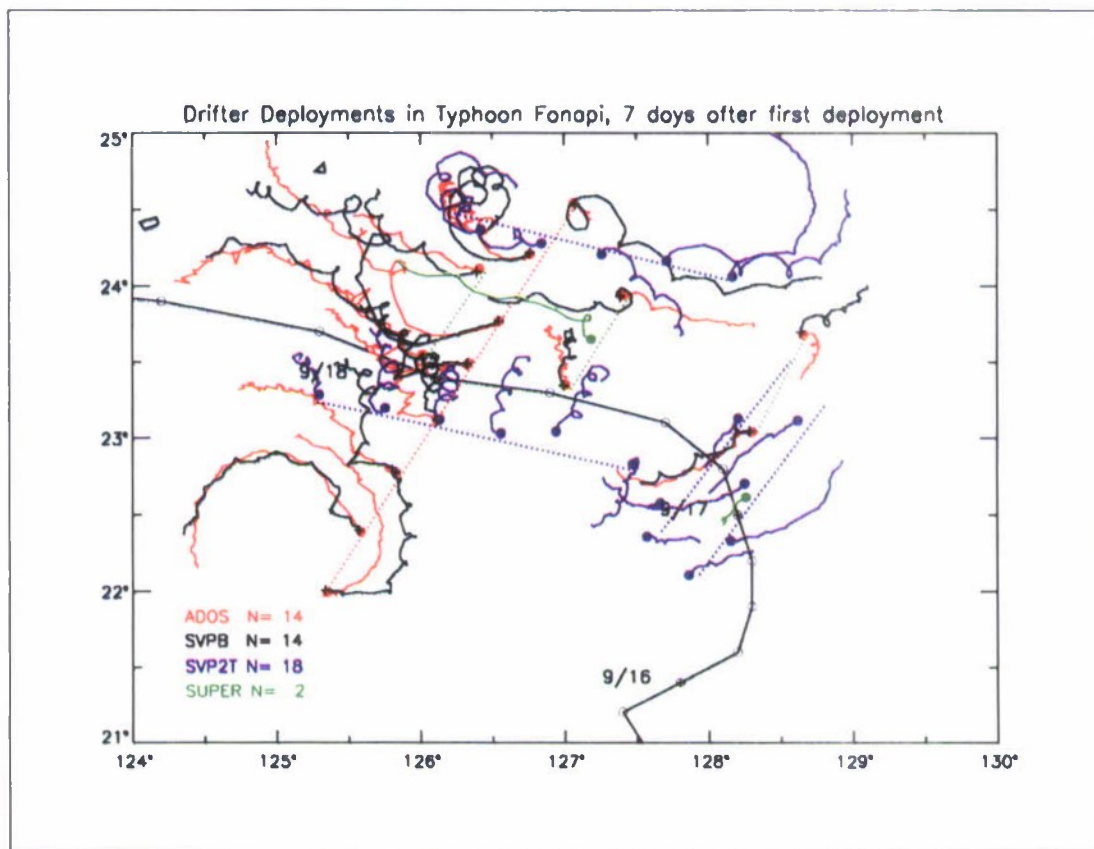


Figure 3: Drifter tracks, typhoon Fanapi, 17-24 September, 2010.

### Impact/Applications

The drifter data were placed on the GTS for use by global scientific community and on the ITOP website for the USE of the ITOP group.

### Transitions

None to date

### Related Projects

The Global Drifter Program

### Publications from This Grant

None to date

Acronym	Definition
ADOS	Autonomous Drifting Ocean Stations
AFB	Air Force Base
DURIP	Defense University Research Instrumentation Program
GTS	Global Telecommunication System
ITOP	Impact of Typhoons on the Western Pacific Ocean
ONR	Office of Naval Research
SIO	Scripps Institution of Oceanography
SVPB	Surface Velocity Program Barometer